Notes on Completion: Please refer to the appropriate NIA Governance Document to assist in the completion of this form. The full completed submission should not exceed 6 pages in total.

NIA Project Registration and PEA Document

Date of Submission

Mar 2013

Project Reference Number

IFIT 2011_03

Project Registration

Project Title

Wide Area Monitoring Protection & Control (WAMPAC)

Project Reference Number

IFIT 2011_03

Project Licensee(s)

Scottish and Southern Electricity Networks Transmission

Project Start

April 2005

Project Duration

5 years and 0 months

Nominated Project Contact(s)

SSEN Future Networks Team

Project Budget

£246,000.00

Summary

Power grid congestion issues and disturbances worldwide have emphasized the need to enhance power grids with Wide Area Monitoring, Protection and Control (WAMPAC) systems as a cost effective solution to improve gird planning, operation, maintenance and energy trading. WAMPAC systems take advantage of the latest advances in sensing, communication, computing, visualization, and algorithmic techniques. Synchronized Measurement Technology (SMT), including Phasor Measurement Units (PMUs) and its applications are an important element and enabler of WAMPAC. Existing experiences in building large scale WAMPAC systems has shown that a key element in building a WAMPAC system is the development of a suitable strategy and creation of a detailed installation plan. In addition, investments in such systems can be optimised, if a design tailored to the specific needs of the power system in question is properly established.

For building a WAMPAC system, the issues related to infrastructure, applications and policies and procedures must be very thoroughly considered. In this sense, the specific features and needs of the power system in question are critical. They determine the system architecture and the prioritisation of applications of the future WAMPAC system.

In terms of the design of a WAMPAC system, the application of a suitable simulation environment for development and testing of WAMPAC functionality is an optimal approach. A number of simulation tools for this purpose exist today. The aim of this project is to check the suitability of DIgSILENT software packages for these challenges.

One specific concern in the near future is the likelihood of large deployment of PMUs integrated in a single WAMPAC system in GB and IRL network. It is expected that some data, available from real PMUs installed in GB and IRL network, will be evaluated using the simulation methods developed. By this, the validation of the existing network models will be of particular interest.

Nominated Contact Email Address(es)

transmissioninnovation@sse.com

Problem Being Solved

Method(s)

Scope

Objective(s)

SHETL is obliged under its licence and the Electricity Act to develop an efficient, coordinated and economic system of electricity supply. Power grid congestion issues and disturbances worldwide have emphasized the need to enhance power grids with smart applications (SmartGrids, Flexnet, and Intelligrid), providing decision support to operators and automation to ensure optimum use of assets, whilst maintaining system security and plant and circuit thermal limits.

WAMPAC technology will potentially become a component part of a future smart grid and this work will support the development of next generation data and communications infrastructures for smart applications.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

n/a

Project Partners and External Funding

n/a

Potential for New Learning

n/a

Scale of Project

n/a

Geographical Area

Revenue Allowed for the RIIO Settlement

Indicative Total NIA Project Expenditure

Project Eligibility Assessment Part 1

There are slightly differing requirements for RIIO-1 and RIIO-2 NIA projects. This is noted in each case, with the requirement numbers listed for both where they differ (shown as RIIO-2 / RIIO-1).

Requirement 1

Facilitate the energy system transition and/or benefit consumers in vulnerable situations (Please complete sections 3.1.1 and 3.1.2 for RIIO-2 projects only)

Please answer **at least one** of the following:

How the Project has the potential to facilitate the energy system transition:

n/a

How the Project has potential to benefit consumer in vulnerable situations:

n/a

Requirement 2 / 2b

Has the potential to deliver net benefits to consumers

Project must have the potential to deliver a Solution that delivers a net benefit to consumers of the Gas Transporter and/or Electricity Transmission or Electricity Distribution licensee, as the context requires. This could include delivering a Solution at a lower cost than the most efficient Method currently in use on the GB Gas Transportation System, the Gas Transporter's and/or Electricity Transmission or Electricity Distribution licensee's network, or wider benefits, such as social or environmental.

Please provide an estimate of the saving if the Problem is solved (RIIO-1 projects only)

n/a

Please provide a calculation of the expected benefits the Solution

n/a

Please provide an estimate of how replicable the Method is across GB

n/a

Please provide an outline of the costs of rolling out the Method across GB.

n/a

Requirement 3 / 1

Involve Research, Development or Demonstration

A RIIO-1 NIA Project must have the potential to have a Direct Impact on a Network Licensee's network or the operations of the System Operator and involve the Research, Development, or Demonstration of at least one of the following (please tick which applies):

☐ A specific piece of new (i.e. unproven in GB, or where a method has been trialled outside GB the Network Licensee must justify repeating it as part of a project) equipment (including control and communications system software).

☐ A specific novel arrangement or application of existing licensee equipment (including control and/or communications systems and/or software)

☐ A specific novel operational practice directly related to the operation of the Network Licensees system

☐ A specific novel commercial arrangement

RIIO-2 Projects

☐ A specific piece of new equipment (including monitoring, control and communications systems and software)

☐ A specific piece of new technology (including analysis and modelling systems or software), in relation to which the Method is

unproven

☐ A new methodology (including the identification of specific new procedures or techniques used to identify, select, process, and analyse information)

☐ A specific novel arrangement or application of existing gas transportation, electricity transmission or electricity distribution equipment, technology or methodology

☐ A specific novel operational practice directly related to the operation of the GB Gas Transportation System, electricity transmission or electricity distribution

☐ A specific novel commercial arrangement

Specific Requirements 4 / 2a

Please explain how the learning that will be generated could be used by the relevant Network Licensees

n/a

Or, please describe what specific challenge identified in the Network Licensee's innovation strategy that is being addressed by the project (RIIO-1 only)

n/a

☐ Has the Potential to Develop Learning That Can be Applied by all Relevant Network Licensees

Is the default IPR position being applied?

☐ Yes

Please demonstrate how the learning from the project can be successfully disseminated to Network Licensees and other interested parties.

Please describe how many potential constraints or costs caused, or resulting from the imposed IPR arrangements.<

Please justify why the proposed IPR arrangements provide value for money for customers.

Project Eligibility Assessment Part 2

Not lead to unnecessary duplication

A Project must not lead to unnecessary duplication of any other Project, including but not limited to IFI, LCNF, NIA, NIC or SIF projects already registered, being carried out or completed.

Please demonstrate below that no unnecessary duplication will occur as a result of the Project.

n/a

If applicable, justify why you are undertaking a Project similar to those being carried out by any other Network Licensees.

n/a

Additional Governance And Document Upload

Please identify why the project is innovative and has not been tried before

n/a

Relevant Foreground IPR

n/a

Data Access Details

n/a

Please identify why the Network Licensees will not fund the project as apart of it's business and usual activities

n/a

Please identify why the project can only be undertaken with the support of the NIA, including reference to the specific risks(e.g. commercial, technical, operational or regulatory) associated with the project

n/a

This project has been approved by a senior member of staff

☑ Yes